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TWO TEMPERATURE TWO STAGE FORMING

ABSTRACT OF THE DISCLOSURE

A method is disclosed for two-stage stretch forming of a sheet metal blank workpiece between a preform tool with a concave cavity and an opposing finish-form punch tool. Both tools are independently heated to different forming temperatures with the preform tool being hotter. Gas pressure is first applied to one side of the workpiece in the first forming stage to balloon it into the cavity of the preform tool. Gas pressure is then applied to the other side of the preformed workpiece to stretch it against the finish-form surface. The hotter preform tool enables faster forming and gas venting in the first stage. The cooler finish-form tool enables the final shaping of the part and its undistorted removal from the punch surface.